

**THE REAL PRICE OF KNOWLEDGE: A GLOBAL DATA ANALYSIS ON THE
TRUE COST OF STUDYING ABROAD**

BY

OYIBO OGHENENYERHOWWO DORCAS

INTRODUCTION

Beyond tuition lies a hidden world of expenses: rent, insurance, living costs, and currency strength. In this study, I explore how much it truly costs to chase knowledge across borders — and what factors make education affordable (or not).

This analysis is based on real data from the Cost of International Education Dataset, and it reveals surprising insights into how location, duration, and exchange rates shape the global education economy.

(a) Objective

Higher education abroad can be a life-changing opportunity — but it comes with financial challenges that vary widely from one region to another. This project explores the Cost of International Education Dataset, revealing how tuition, living costs, rent, visa fees, and currency strength collectively shape the real cost of studying abroad.

(b) Problem Being Addressed

Students often underestimate total expenses when choosing universities overseas. This analysis aims to help students, consultants, and scholarship providers make informed choices by uncovering the financial realities behind global study destinations.

(c) Key Datasets and Methodologies

- **Dataset:** Cost of International Education (Kaggle, 2023)
- **Tool Used:** Microsoft Excel (Pivot Tables, Dashboards & Visualizations)
- **Methodology:** Data cleaning, transformation, cost modeling, and comparative regional analysis
- **Key Question:** *Is there really any price for knowledge?*

STORY OF DATA

(a) Data Source

- Source: Kaggle — *Cost of International Education Dataset*
- Year Covered: 2023
- Records: 908 rows | 12 columns

(b) Data Collection Process

Data was gathered from public sources including university websites and education platforms, focusing on tuition, rent, visa, and cost-of-living metrics.

(c) Data Structure

Each record represents a combination of country, city, and university program, featuring:

- Tuition Fee (USD)
- Living Cost Index
- Rent
- Visa & Insurance Costs
- Exchange Rate

(d) Important Features and Their Significance

- **Tuition Fee:** Core financial investment.
- **Living Cost Index:** Captures day-to-day affordability.
- **Exchange Rate:** Reflects real purchasing power.
- **Program Duration:** Determines total expense exposure.

(e) Data Limitations

1. Covers 2021–2023; recent fluctuations may not appear.
2. Missing demographic details (degree level, age, etc.).
3. Limited coverage of rural or smaller universities.
4. Based on public averages — may not mirror individual experience.
5. Exchange rate changes may affect cost accuracy.

DATA SPLITTING AND PREPROCESSING

(a) Data Cleaning

- Removed duplicates and blanks.
- Rounded exchange rates to two decimals.

(b) Handling Missing Values: There wasn't any missing data.

(c) Data Transformation

Added key computed fields:

1. **Monthly Estimated Living Cost:** Formula:
$$=([\@[\text{Living_Cost_Index}]]/123.3)*1850.$$
 - Based on a baseline of \$1,850 (Namrata Sukhtankar, 2023) and a living cost index of 123.3 (Data Pandas, 2023).
2. Annual Living Cost: Formula used = Monthly Estimated Living * 12.

3. Exchange Rate Marker: Categorized into *Strong*, *Medium*, and *Weak* currencies; Formula: =IF([@Exchange_Rate]<5,"Strong Currency",IF([@Exchange_Rate]<=1000,"Medium Currency","Weak Currency")).
4. Years Column: Combined duration into a readable format (e.g., "4 years").

(d) Data Splitting

Segmented by country, program duration, and program level (Bachelor's, Master's, PhD) for comparative analysis.

(e) Industry Context

Global education has become a billion-dollar industry, with cost transparency now a deciding factor for students choosing where to study.

(f) Stakeholders

- Prospective Students
- Educational Consultants
- Admissions Officers
- Scholarship Organizations

(g) Value to the Industry

This analysis provides data-driven insights to guide financial planning, improve cost transparency, and support policy-making in international education.

| Country | City | University | Program | Level | Duration_Years | Tuition_USD | Living_Cost_I | Rent_USD | Visa_Fee_USD | Insurance_USD | Exchange_Rate |
|-------------|------------|----------------------------------|-------------------------|----------|----------------|-------------|---------------|----------|--------------|---------------|---------------|
| USA | Cambridge | Harvard University | Computer Science | Master | 2 | 55400 | 83.5 | 2200 | 160 | 1500 | 1 |
| UK | London | Imperial College London | Data Science | Master | 1 | 41200 | 75.8 | 1800 | 485 | 800 | 0.79 |
| Canada | Toronto | University of Toronto | Business Analytics | Master | 2 | 38500 | 72.5 | 1600 | 235 | 900 | 1.35 |
| Australia | Melbourne | University of Melbourne | Engineering | Master | 2 | 42000 | 71.2 | 1400 | 450 | 650 | 1.52 |
| Germany | Munich | Technical University of Munich | Mechanical Engineering | Master | 2 | 500 | 70.5 | 1100 | 75 | 550 | 0.92 |
| Japan | Tokyo | University of Tokyo | Information Science | Master | 2 | 8900 | 76.4 | 1300 | 220 | 750 | 145.8 |
| Netherlands | Amsterdam | University of Amsterdam | Artificial Intelligence | Master | 1 | 15800 | 73.2 | 1500 | 180 | 720 | 0.92 |
| Singapore | Singapore | National University of Singapore | Finance | Master | 1.5 | 35000 | 81.1 | 1900 | 90 | 800 | 1.34 |
| France | Paris | Sorbonne University | International Relations | Master | 2 | 4500 | 74.6 | 1400 | 99 | 650 | 0.92 |
| Switzerland | Zurich | ETH Zurich | Physics | Master | 2 | 1460 | 91.5 | 2100 | 88 | 1200 | 0.89 |
| Sweden | Stockholm | KTH Royal Institute | Sustainable Technology | Master | 2 | 0 | 71.8 | 1200 | 110 | 400 | 10.45 |
| Denmark | Copenhagen | University of Copenhagen | Bioinformatics | Master | 2 | 0 | 73.4 | 1300 | 120 | 450 | 6.92 |
| China | Beijing | Tsinghua University | Computer Engineering | Master | 2.5 | 8900 | 52.3 | 800 | 140 | 400 | 7.18 |
| South Korea | Seoul | Seoul National University | Digital Media | Master | 2 | 7200 | 68.7 | 900 | 130 | 500 | 1320.5 |
| Ireland | Dublin | Trinity College Dublin | Data Analytics | Master | 1 | 28900 | 72.9 | 1600 | 150 | 650 | 0.92 |
| South Korea | Busan | Pusan National University | Business | Bachelor | 4 | 5900 | 62.4 | 700 | 130 | 500 | 1320.5 |
| New Zealand | Auckland | University of Auckland | Marine Biology | Bachelor | 3 | 28500 | 69.8 | 1200 | 245 | 600 | 1.64 |
| Austria | Vienna | University of Vienna | Social Sciences | Bachelor | 3 | 1500 | 67.4 | 950 | 160 | 500 | 0.92 |
| Belgium | Brussels | KU Leuven | Biomedical Sciences | Bachelor | 3 | 3500 | 68.9 | 1000 | 180 | 550 | 0.92 |
| USA | Ann Arbor | University of Michigan | Aerospace Engineering | Bachelor | 4 | 52300 | 72.5 | 1800 | 160 | 1500 | 1 |
| USA | Atlanta | Georgia Tech | Industrial Engineering | Bachelor | 4 | 43800 | 71.5 | 1700 | 160 | 1500 | 1 |
| USA | Austin | UT Austin | Chemical Engineering | Bachelor | 4 | 40900 | 72.4 | 1600 | 160 | 1500 | 1 |
| UK | Bristol | University of Bristol | Mathematics | Bachelor | 3 | 31200 | 69.8 | 1100 | 485 | 800 | 0.79 |
| Canada | Ottawa | University of Ottawa | Political Science | Bachelor | 4 | 28900 | 68.5 | 1300 | 235 | 900 | 1.35 |
| Hong Kong | Hong Kong | HKUST | Finance | Bachelor | 4 | 22000 | 78.6 | 1500 | 120 | 600 | 7.82 |

Image I: Dataset before Data Preprocessing

| Country | City | University | Program | Level | Duration | Years | Tuition_USD | Living_Cost | Rent_USD | Isa_Fee | Insurance_U | Exchange | Affordability_ma | Estimated | Estimated | Total_C |
|----------------|------------------|----------------------------------|-------------------------|----------|-----------|----------|-------------|-------------|----------|---------|-------------|-----------------|------------------|-----------|-----------|---------|
| USA | Cambridge | Harvard University | Computer Science | Ph.D | 2 years | \$55,400 | 83.5 | \$2,200 | \$160 | \$1,500 | 1.00 | Strong Currency | \$1,253 | \$15,034 | \$74,294 | |
| UK | London | Imperial College London | Data Science | Bachelor | 1 years | \$41,200 | 70 | \$1,800 | \$485 | \$800 | 1.10 | Strong Currency | \$1,050 | \$12,603 | \$56,888 | |
| Canada | Toronto | University of Toronto | Business Analytics | Ph.D | 2 years | \$38,500 | 72.5 | \$1,600 | \$235 | \$900 | 1.35 | Strong Currency | \$1,088 | \$13,054 | \$54,289 | |
| Australia | Melbourne | University of Melbourne | Engineering | Master | 2 years | \$42,000 | 71.2 | \$1,400 | \$450 | \$99 | 1.52 | Strong Currency | \$1,068 | \$12,819 | \$56,738 | |
| Germany | Munich | Technical University of Munich | Mechanical Engineering | Master | 2 years | \$500 | 70.5 | \$1,100 | \$100 | \$550 | 1.01 | Strong Currency | \$1,058 | \$12,693 | \$14,943 | |
| Japan | Tokyo | University of Tokyo | Information Science | Master | 2 years | \$8,900 | 76.4 | \$1,300 | \$220 | \$750 | 145.80 | Medium Currency | \$1,146 | \$13,756 | \$24,928 | |
| Netherlands | Amsterdam | University of Amsterdam | Artificial Intelligence | Master | 1.5 years | \$15,800 | 73.2 | \$1,500 | \$180 | \$101 | 0.92 | Strong Currency | \$1,098 | \$13,180 | \$30,761 | |
| Singapore | Singapore | National University of Singapore | Finance | Master | 1.5 years | \$35,000 | 81.1 | \$1,900 | \$90 | \$600 | 1.34 | Strong Currency | \$1,217 | \$14,602 | \$52,392 | |
| France | Paris city tower | Sorbonne University | International Relations | Master | 2 years | \$4,500 | 74.6 | \$1,400 | \$99 | \$650 | 0.92 | Strong Currency | \$1,119 | \$13,432 | \$20,081 | |
| Switzerland | Zurich | ETH Zurich | Physics | Master | 2 years | \$1,460 | 91.5 | \$2,100 | \$88 | \$1,200 | 0.89 | Strong Currency | \$1,373 | \$16,474 | \$21,322 | |
| Sweden | Stockholm | KTH Royal Institute | Sustainable Technology | Master | 2 years | \$100 | 71.8 | \$1,200 | \$110 | \$400 | 10.45 | Medium Currency | \$1,077 | \$12,927 | \$14,737 | |
| Denmark | Copenhagen | University of Copenhagen | Bioinformatics | Master | 2 years | \$0 | 73.4 | \$1,300 | \$120 | \$450 | 6.92 | Medium Currency | \$1,101 | \$13,216 | \$15,086 | |
| China | Beijing | Tsinghua University | Computer Engineering | Master | 2.5 years | \$8,900 | 52.3 | \$800 | \$140 | \$400 | 7.18 | Medium Currency | \$785 | \$9,417 | \$19,657 | |
| South Korea | Seoul | Seoul National University | Digital Media | Master | 2 years | \$7,200 | 68.7 | \$900 | \$130 | \$500 | 1320.50 | Weak Currency | \$1,031 | \$12,369 | \$21,099 | |
| Ireland | Dublin | Trinity College Dublin | Data Analytics | Master | 1 years | \$28,900 | 72.9 | \$1,600 | \$150 | \$650 | 0.92 | Strong Currency | \$1,094 | \$13,126 | \$44,426 | |
| South Korea | Busan | Pusan National University | Business | Bachelor | 4 years | \$5,900 | 62.4 | \$700 | \$130 | \$500 | 1320.50 | Weak Currency | \$936 | \$11,235 | \$18,465 | |
| New Zealand | Auckland | University of Auckland | Marine Biology | Bachelor | 3 years | \$28,500 | 69.8 | \$1,200 | \$245 | \$600 | 1.64 | Strong Currency | \$1,047 | \$12,567 | \$43,112 | |
| Austria | Vienna | University of Vienna | Social Sciences | Bachelor | 3 years | \$1,500 | 67.4 | \$950 | \$160 | \$500 | 0.92 | Strong Currency | \$1,011 | \$12,135 | \$15,245 | |
| Belgium | Brussels | KU Leuven | Biomedical Sciences | Bachelor | 3 years | \$3,500 | 68.9 | \$1,000 | \$180 | \$550 | 0.92 | Strong Currency | \$1,034 | \$12,405 | \$17,635 | |
| USA | Ann Arbor | University of Michigan | Aerospace Engineering | Bachelor | 4 years | \$52,300 | 72.5 | \$1,800 | \$160 | \$1,500 | 1.00 | Strong Currency | \$1,088 | \$13,054 | \$68,814 | |
| USA | Atlanta | Georgia Tech | Industrial Engineering | Bachelor | 4 years | \$43,800 | 71.5 | \$1,700 | \$160 | \$1,500 | 1.00 | Strong Currency | \$1,073 | \$12,873 | \$60,033 | |
| USA | Austin | UT Austin | Chemical Engineering | Bachelor | 4 years | \$40,900 | 72.4 | \$1,600 | \$160 | \$1,500 | 1.00 | Strong Currency | \$1,086 | \$13,036 | \$57,196 | |
| UK | Bristol | University of Bristol | Mathematics | Bachelor | 3 years | \$31,200 | 69.8 | \$1,100 | \$485 | \$800 | 0.79 | Strong Currency | \$1,047 | \$12,567 | \$46,152 | |
| Canada | Ottawa | University of Ottawa | Political Science | Bachelor | 4 years | \$28,900 | 68.5 | \$1,300 | \$235 | \$900 | 1.35 | Strong Currency | \$1,028 | \$12,333 | \$43,668 | |
| Hong Kong | Hong Kong | HKUST | Finance | Bachelor | 4 years | \$22,000 | 78.6 | \$1,500 | \$120 | \$600 | 7.82 | Medium Currency | \$1,179 | \$14,152 | \$38,372 | |
| Portugal | Lisbon | University of Lisbon | Architecture | Bachelor | 3 years | \$3,500 | 58.4 | \$800 | \$120 | \$450 | 0.92 | Strong Currency | \$876 | \$10,515 | \$15,385 | |
| Israel | Tel Aviv | Tel Aviv University | Computer Science | Bachelor | 3 years | \$12,000 | 76.2 | \$1,200 | \$150 | \$800 | 3.72 | Strong Currency | \$1,143 | \$13,720 | \$27,870 | |
| Taiwan | Taipei | National Taiwan Univ. | Electronics Engineering | Bachelor | 4 years | \$5,200 | 62.8 | \$700 | \$140 | \$450 | 31.20 | Medium Currency | \$942 | \$11,307 | \$17,797 | |
| Czech Republic | Prague | Charles University | Medicine | Bachelor | 3 years | \$9,800 | 54.6 | \$650 | \$100 | \$400 | 22.50 | Medium Currency | \$819 | \$9,831 | \$20,781 | |

Image II: Dataset after Data Preprocessing

The following pre-analysis, in-analysis and post-analysis insights are displayed in the International student cost report dashboard below:

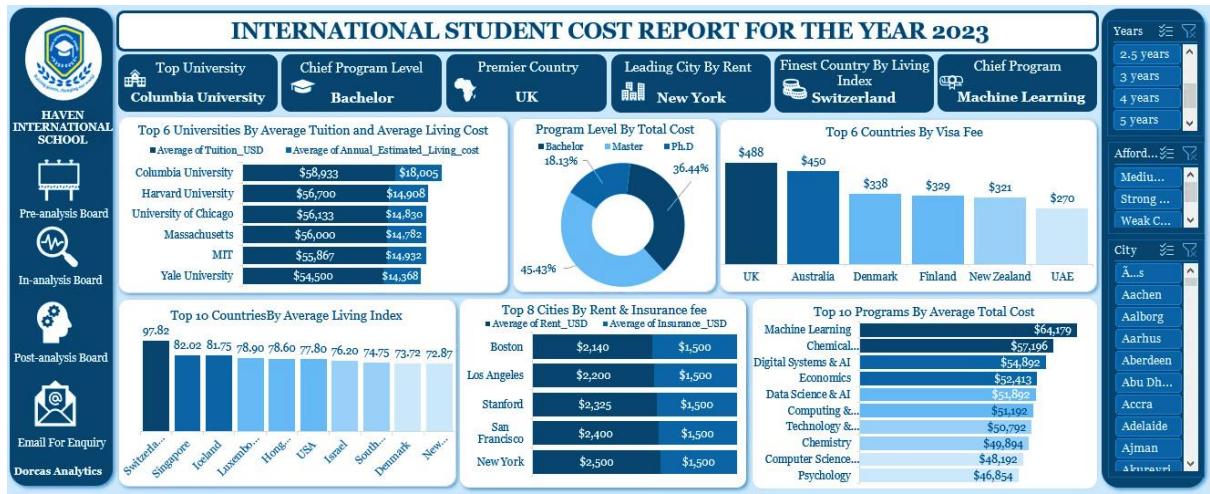


Image III: International Student Cost Report Dashboard

PRE-ANALYSIS

(a) Key Trends

- Western Europe and North America have the highest total costs.
- Asian countries offer more cost-effective programs.
- One-year master's programs reduce living expenses but often charge higher tuition.

(b) Potential Correlations

- Weaker currencies = lower total study costs.
- Longer programs = higher cumulative living expenses.

- Exchange rate stability strongly affects affordability.

(c) Initial Insights

Singapore, China, and Argentina are emerging as affordable, high-quality study destinations — especially for tech and finance programs.

IN-ANALYSIS

(a) Unconfirmed Insights

Early trends suggested higher tuition meant higher affordability; further analysis revealed that exchange rates and living costs were just as influential.

(b) Initial Recommendations

- Evaluate total cost-to-duration ratio, not just tuition.
- Consider the currency strength and local living index before applying.

(c) Excel Techniques Used

- Pivot Tables for cost aggregation
- Conditional Formatting for region highlights
- Formulas for calculated fields
- Charts and Dashboards for comparative visual insights

POST-ANALYSIS AND INSIGHTS

(a) Key Findings

One-Year Master's Programs

- Countries: UK, Netherlands, Ireland
- Highest Living Index: Netherlands (73.2)
- Fields: Data Science, Cybersecurity, Analytics
- Visa Fees: UK (\$485), Netherlands (\$180), Ireland (\$160)

1.5-Year Master's Programs

- Country: Singapore (National University of Singapore)
- Tuition: ~\$35,000 | Living Cost: ~\$14,602 | Total: ~\$52,392
- Field: Finance

Two-Year Master's Programs

- Countries: USA (MIT, Columbia), Switzerland
- Switzerland Living Index: 100.12 (highest globally)
- Fields: Economics, Data Science

2.5-Year Master's Programs

- Country: China (Tsinghua, Shanghai Jiao Tong)
- Visa: \$140 | Living Index: 50.03
- Fields: Computer Engineering, AI

Three-Year Bachelor's Programs

- Countries: UK, Australia
- Average Cost: \$40,968–\$50,808
- Fields: Business, Engineering, Computer Systems

Four-Year Bachelor's & PhD Programs

- Countries: USA, Switzerland, Australia
- Fields: Aerospace & Chemical Engineering

Five-Year PhD Programs

- Countries: USA, Argentina
- Fields: Electrical Engineering (~\$72,640), Physics (~\$71,138)

(b) Comparison with Initial Findings

Initial assumptions focused on tuition as the main driver. Post-analysis revealed **living costs** and **currency strength** often outweigh tuition differences in total affordability.

DATA VISUALIZATIONS & CHARTS

Charts Used in Excel Dashboard:

- **Bar Charts:** Displays top 10 program by average total cost.
- **Column Charts:** Displays top 6 countries by visa fee and top 10 countries by average living index.
- **Pie Charts:** Display program level by total cost.
- **100% Stacked Combo chart:** Displays top 8 cities by rent & insurance fee.
- **Stacked bar chart:** Displays top 6 universities by average tuition and average living cost.

RECOMMENDATIONS AND OBSERVATIONS

(a) Actionable Insights

For Educational Consultants & Advisors

- Emphasize program length vs. total cost trade-offs (e.g., UK one-year master's = fast but expensive).
- Provide city-level breakdowns (rent, insurance) for realistic cost planning.

For College Admissions Advisors

- Help students balance return on investment (ROI) and career opportunities when choosing programs.
- Integrate cost-of-living data into application guidance and financial planning.
- Offer visa process support—costs vary significantly by country.

For Recent Graduates

- Evaluate programs not just by tuition, but by total cost-to-duration ratio.
- Choose countries with strong post-graduation employment markets.
- Consider alternative hubs (Singapore, China) for affordable quality education.

For Scholarship Organizations

- Target high-cost, high-impact programs (e.g., UK/US Master's & PhDs).
- Prioritize in-demand fields like Data Science, AI, Cybersecurity, and Engineering.
- Create scholarships encouraging study in emerging economies to diversify talent pipelines.

(b) Optimizations or Business Decisions

- Integrate cost-of-living tools into university portals.
- Scholarship organizations can prioritize **high-cost, high-impact programs** (e.g., UK/US Master's, PhDs).
- Encourage study in **emerging, affordable economies** (e.g., Singapore, China, Argentina).

(c) Unexpected Outcomes

- Asia is fast becoming a top-quality, low-cost education hub.
- Shorter programs aren't always cheaper — tuition intensity can offset living cost savings.

CONCLUSION

The findings are clear: the true cost of studying abroad goes far beyond tuition. Living expenses, visa fees, and exchange rate strength all play a defining role in shaping affordability.

By combining data with practical insights, this research provides a roadmap for students, consultants, and institutions to make financially smart, data-driven education choices.

Final thought: Whether you're a student, consultant, or policymaker — the question is no longer "*Can I afford to study abroad?*"

It's now "*Where and how can I make the smartest investment in my education?*"

REFERENCES & APPENDICES

1. Adil Shamim, 2025. *Kaggle: Cost of International Education Dataset*. Available at: <https://www.kaggle.com/datasets/adilshamim8/cost-of-international-education> (Accessed: 7th October 2025).
2. Namrata Sukhtankar, 2023. *Cost Of Living In The USA For Students 2025* Available at: <https://uniacco.com/blog/cost-of-living-in-the-usa> (Accessed: 7th October 2025).
3. Data Pandas, 2025. *Cost Of Living By State*. Available at: <https://www.datapandas.org/ranking/cost-of-living-by-state> (Accessed: 7th October 2025).